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WE have hitherto said nothing about the quarrel over the Third District Court House in New York, because the matter was undergoing official investigation. The investigation is now finished, and the committee of the Board of Aldermen have reported. The main facts in the case are these: Mr. Robert Cushing, one of the contractors on the work, brought in a bill of seventeen thousand dollars for extras, which the architects, Messrs. Withers and Vaux, refused to allow, and the commissioners therefore refused to pay. He then sued the city, and lost his suit. Thereupon he brought a long list of charges against the architects, accusing them of incompetency and misconduct in a variety of ways. The only charge, however, which on examination proved to have any weight, was that every bidder had been obliged, before he could get even a look at the drawings, to pay the architects ten dollars for a copy of a bill of quantities, on which his estimate must be based, and to sign an agreement to pay them three-quarters of one per cent for making out the bill in case his bid was accepted. Certain other contractors, the brothers Horgan and John Hogan, joined in this last accusation. It appeared, however, in the course of the examination, that the bills of quantities were not prepared by the architects, but by two other gentlemen, Mr. Oswald and Mr. Radford, to whom some of the supervision of the work was deputed, and who prepared the bills in their own unemployed time. It appeared further that the architects had no interest in the matter, the payments being made to Messrs. Oswald and Radford, and that so far from the contractors being required to pay for the bills, it was optional with them to use them or not. The Horgan Brothers, in fact, got their contract without making any use of the quantities or any payment. Finally the evidence showed that the quantities were taken and the bills supplied without any understanding with the architects, in whose office the plans were not kept, and who were not informed of the matter till it had taken place. It appeared also that the Horgans and Hogan, who supported Cushing's accusations, were men whose work had been rejected as unsatisfactory by the architects, and who had been compelled to do it over again, and who thereupon, like Cushing, had brought in charges for extra work which were disallowed.

WHAT Mr. Cushing chose to call blackmailing was therefore, it appears, simply an effort, not objected to by the architects, to introduce the custom, time-honored in England, of furnishing the bidders with the quantities on which their estimates are based. This is often done by the English architects themselves, but in London at least it is done by a distinct class of men called quantity-surveyors. The work is laborious and responsible, and requires much special knowledge. The fee of three-quarters of one per cent charged for it is not thought too large. In France the corresponding functionaries, called *métreurs*, are legally entitled to a fee of from one and a fifth to one and a half per cent, according to the kind of work which they measure. The system has its advantages and its disadvantages, but the first would seem to outweigh. The quantities must be taken out; and it is more economical on the whole to have it done once for all by a surveyor than once for each by all the bidders; besides which the surveyor's work is apt to be more accurate than the rough and hasty computation of the bidders, and puts them more on an equality. The certified bill is of value in determining claims for extra material, and moreover takes away a temptation to the bidder to allow for scant material. Nevertheless, we are told, and perhaps for this very last reason, there is a growing tendency among the English mechanics to neglect the surveyor's quantities and take out their own. It is a system which we should expect to suit American ways, and to become popular here when it was once understood. The time of most Americans is valuable to them, and they do not like to waste it. The cost of a bill of quantities divided among all the mechanics who compete for a given contract is but a trifle compared with what their united time would amount to where each one did his own measuring. One of the contractors in the case in New York testified that to take out his quantities for himself would have cost him two or three hundred dollars; that they would not have been so accurate as those that were furnished, nor his estimate consequently so close as it was; and that he would rather have agreed to pay the five or six hundred dollars that he did pay, in case of success, than be obliged in any case to pay half that sum to supply them himself. Two reports were submitted to the New York Board of Aldermen by their committee. The majority report condemned sweepingly the system of furnishing the quantities as "a most improper and pernicious practice," and censured the architects for permitting it, while it declared that they found no proof whatever that the architects were in any way interested in the commissions received for it. The minority report approved the whole proceeding.

THE Congressional Library has been a football for some years. The need of new accommodation for it has been sorely felt for a long time; and three or four years ago a competition was opened among architects for a new building. This resulted in giving a first prize to a design by Mr. Melander, and a second prize to one by Messrs. Peltz and Smithmeyer, if we remember rightly. At this point the matter dropped, and lay dormant till recently the need, which grows always more pressing, has again been brought to notice, and the provision of a new building discussed. Now it is reported in the papers that the Joint Committee of Congress on the Library has in preparation a bill providing for the extension of the east front of the old Capitol, so as to give quarters for the library in it. So far as we can judge with no plan of the proposed alteration, this seems to be an unpromising scheme. The east front of the Capitol has always been intended to be its principal front. The central portion of it is the grand vestibule, serving as its main entrance, and the chief approach to the rotunda. To block this space by putting a new library in the front would be to ruin the plan of the building, we should say. Mr. Walter in designing the new wings also designed, we have always understood, a new centre which should support them more adequately than does the old central mass, which is, except for the dome, substantially in the condition in which Bulfinch left it, the material being of sandstone painted, while the wings are of marble. The newspaper report says that an appropriation of two hundred thousand dollars is proposed to begin the work, which will cost a million dollars. This looks as if definite plans must have been prepared, and some estimate made of actual work to be done. To undertake a further extension of the Capitol from any designs but Mr. Walter's would be at once an indignity and a misfortune.

THE verdict of the coroner's jury on the Brooklyn disaster does not mince matters about the culpability of the managers' neglect to guard against fire in their administration of the theatre. It reasonably censures the neglect of the fire apparatus and its inefficiency, the want of discipline and responsibility among the employees, the fastening of one exit from the dress-circle, the cumbering of the stage with scenery not in use, and says that the failure to take warning by

the two fires which had occurred just before the final and fatal one was "a violation of a most vital duty to the public." The jury recommend that in future theatres there be a brick proscenium-wall, that there shall be two wide and commodious staircases to the upper gallery, with one or two others of the recognized precautions; and in general terms warn the public to demand stricter laws for the construction of buildings for public amusements. This is well, and may, we hope, have some effect for the moment at least, on managers and on what the public demands of them. But with regard to the original vices of the theatre itself, by virtue of which the fire once allowed to occur was made terribly disastrous, the report is singularly reticent: we see no other word for it. The theatre is described as substantially built, and "admirably adapted for the purpose for which it was intended."

THE last statement may be true, but consideration of the planning has convinced us that the security of the audience was no real part of that purpose. As for its being substantial, what may be so-called in one building is not so in another. A warehouse built like a substantial shed is not substantial; nor is a theatre, built like a substantial dwelling-house; or if the word is used in a sense that allows this application, its use is altogether irrelevant to the subject of the verdict. A theatre which burns through the roof and consumes its audience in ten or fifteen minutes from the moment when a fire takes in the scenery cannot be said to be substantially built in any sense that is worth any thing. The report says cautiously that there would have been "greater security for the safety of the audience" if it had had a brick proscenium-wall, and two hand-rails to the gallery stairs. They leave it to the reader to remember or discover that there was but one stairway to the upper gallery, and that this stairway was deplorably inadequate. They do not say that the box-office where one of the previous fires occurred was under this very stairway, nor that the space over the ceiling of the auditorium was stored with combustible rubbish; nor finally that in planning the theatre it was turned the wrong way, and the audience made to go in at the rear for the sake of getting an entrance on Washington Street. All these errors, we are glad to hear, are to be rectified in the rebuilding; but they existed none the less in the former theatres, and the verdict as it stands seems to us a curiously one-sided document.

THE report for 1876 of Mr. Shaw, the Inspector of Buildings of the city of Boston, shows the effect of business depression upon building during that year. Only 200 permits were issued for buildings of brick, iron, or stone, within the building limit. This is in singular contrast with the number, 1,586, named for Chicago during the same time. The balance is, to be sure, somewhat redressed when we compare the cost (above three and a quarter millions of dollars) of the two hundred buildings in Boston with that (eight millions and a quarter) of the sixteen hundred in Chicago, — unless, what seems possible, there is an error in the second amount, which we took from one of the Chicago papers. Besides those that we have mentioned, 532 permits were issued in Boston for wooden buildings outside the building limit, at an estimated cost of one million and a third. Among the 200, 96 are dwellings, 20 are family hotels or tenement houses, 13 are the same with shops under them, 23 are mercantile buildings, and two are churches. The greatest number, 62, are three stories high; the next, 51, four stories; only 15 are five stories. It is in notable contrast to the former prevalence of mansard roofs in Boston, that while only 84 of these buildings have them, in the two chief business wards, the sixth and twelfth, every one has a flat roof. Of the 86 mansards, 36 are in the so-called Back-Bay ward, the fashionable residence quarter; and the distribution of the rest shows that nearly all of them must be upon dwellings. Among the whole 200 are only 10 with pitched roofs, and all but three of these are in the extreme suburban wards; so that it may be said that no pitched roofs are built in the city proper. So entirely has the old fashion gone out.

The number of fires in the year was almost three hundred, and the estimated loss by them nearly one hundred and eighty thousand dollars. This may be regarded as the income at nine per cent on two millions of dollars invested during this year by the people and the insurance-companies in the privilege of building combustible houses. The questions of building-construction and fire-proofing, and the safety of halls and theatres, naturally claim Mr. Shaw's attention. He pleads wisely for more stringent building-laws, and for the adoption of some of the provisions which are common in Europe, citing extracts from the laws of Vienna and London, and also from an address of Mr. Oakey, the President of the National Board of Underwriters, in which he says that our careless ways of building make our insurance rates four times higher than are charged in Great Britain, France, or Germany. An act supplementary to the existing building-law was passed by the State Legislature in the beginning of the year, which fortunately gave the inspectors authority to insist on the most necessary precautions in theatres and halls when the warning of the Brooklyn catastrophe came. What precautions were imposed has been sufficiently made known. The only unusual thing that we notice is his combination of a wire curtain, a woollen curtain, and a sprinkler to keep it wet, at the proscenium openings. While the requisitions made upon the theatres have been met readily by the proprietors, we understand, we mark the significant statement that immediately after the passage of the act of 1876, Mr. Shaw called the attention of the City Council to the insecure condition of certain of the city buildings in regard to egress and to fire, and that their condition is still unchanged. These buildings were public schoolhouses. *Quis custodiet ipsos custodes?*

WE are again obliged by want of space to hold over our editorial writing till another week, — a postponement which we presume our readers will easily forgive.

AUSTRIAN AND FRENCH BUILDING-LAWS.

BY NELSON L. DERBY.

THE following translation of the building-laws of France and Austria, as far as they relate to fires, especially in theatres, has been prepared by the direction of the Committee of the New York Chapter of the A. I. A.; which committee is now considering a revision of the New York building-act. The Vienna laws were codified and published in 1875; the French laws date from 1864.

LAWS IN FORCE IN VIENNA.

In every new building a fire-proof stairway must extend from cellar to attic. In buildings of great size, several such stairways must exist. The balusters must be at least three feet high and of fire-proof material. The width of the stairs must be at least 3½ feet; treads must not be under 11½ inches, nor risers more than 6¼ inches. All skylights above stairways must be framed of iron, and rest upon masonry. All passages communicating with stairways must be at least four feet wide, must be fire-proof, and must be provided (if open on one side) with rails of incombustible material, three feet high. The floor directly underneath the roof must be massive (formed of half trees touching one another), must be covered with a three-inch layer of dry incombustible matter (generally the refuse mortar and plaster of demolished buildings), and paved with brick. The roof-plates must rest upon masonry walls rising three inches at least above this brick flooring. Buildings of great size must be divided by brick walls, once in every hundred feet of length, and these walls must be carried six inches at least above the roof. Openings through them must be closed by self-closing iron doors, which can be easily opened from both sides. These doors must be hung in iron frames. In all buildings occupied by large numbers of people, fire-extinguishers must be kept on hand. Stairways serving for the exit of fifty people must, if straight, be four feet wide; if not straight, five feet wide; while for every additional fifty people, six inches must be added to these widths. All floors of wood must be deadened by a three-inch layer of dry incombustible matter."

[These laws are thus generally expressed, from the fact that in Vienna almost all buildings serve in great part for the same purpose, viz., apartment-houses. — *Translator.*]

FRENCH BUILDING-LAWS.

Translated from the "Code des Théâtres," published in Paris, 1876.

2. A theatre may be either isolated or adjacent to other structures, at the pleasure of the proprietor. In the first case a vacant space of at least three mètres must be left between it and the neighboring buildings; this space to be increased where they have the right of light. In case of its being adjacent to another building, the ordinary party-wall must be increased by ten inches

(twenty-five centimètres) of brickwork. Where the theatre is of great size this thickness must be proportionately increased.

3. All interior walls, walls separating the actors' dressing-rooms from the theatre, the proscenium wall, the wall separating the auditorium from the vestibule and from the stairways, must be of masonry. The doors of the actors' dressing-rooms communicating with the theatre must be of iron and self-closing. The proscenium wall must rise above the roof. Where it is pierced by openings other than the great stage opening, iron doors must be provided. The stage opening must be provided with a curtain of wire network, whose meshes shall not have a greater width than two inches (five centimètres.) This curtain shall completely cover the opening, and be suspended by incombustible cords. The decorations placed above the proscenium opening must be of incombustible material.

5. All stairways, the floor of the auditorium, and the partitions of the corridors, shall be of incombustible material.

6. The ceiling of the auditorium must be built of iron and plaster, without the use of wood.

7. On some portion of the proscenium wall, at the greatest practicable height, shall be placed a fire-extinguishing apparatus, with attendants in charge: besides which, hydraulic pressure sufficient to force a stream of water upon the highest portions of the building shall be provided. The importance of this apparatus must be proportioned to the size of the theatre.

8. Pumps must be placed at the level of the ground, in an apartment separated from the theatre by walls of masonry.

9. These pumps must be supplied with water by the city mains, which shall feed reservoirs; also by a well. Each of these sources must alone fully supply the pumps.

10. Around the theatre, hydrants, whose number is to be determined by the proper authorities, shall be placed; these to be fed by the city mains.

11. The auditorium may be heated only by means of openings furnishing warm air rising from furnaces in the cellar. These openings must be placed twelve inches (thirty centimètres) above the floor.

12. Thermometers must be exposed in the corridors, and ventilation suitably provided for.

13. No workshop can be placed above the stage. Above the auditorium, workshops for painters and tailors only may be placed, and then only under the condition that their floors are deadened and paved with tiles. When painters' shops are located here, unless the roof is of iron, or is filled in between the rafters with plaster, their partitions must be plastered, and covered with tiles. Communication between these rooms must be secured by doors of iron.

15. No other division of these lofts can be made.

17. Every theatre must have exterior to itself a storehouse for scenery and stage-machinery. This shall be located under the direction of the proper authorities. All other store-rooms must be separated from the theatre proper by a wall of masonry.

19. No store or warehouse in a theatre building can be let for the accommodation of combustible matter.

20. No one but the janitor and ticket-seller may be lodged in any part of the theatre communicating with the auditorium.

21. No theatre may be opened until so authorized after inspection. If changes are found necessary at the first inspection, a second inspection must follow before the opening.

22. The authorities shall inspect every theatre daily.

28. A force of firemen shall be stationed in every theatre, and shall register their rounds by means of dials placed at points determined by their captain.

54. It is forbidden to smoke upon the stage or in the auditorium of theatres.

ARCHITECTURAL ILLUSTRATIONS. — I.

[Condensed from a paper read before the "Architectural Association," London, on Friday, Jan. 12, 1877, by Maurice B. Adams, A.R.I.B.A.]

IN the illuminated MSS. of the middle ages, more especially those of the tenth and beginning of the eleventh century, ample illustrations of architecture are to be found. Suffice it to say, that without these valuable records the student would have but a faint idea of the real beauty and elaborate character of Anglo-Saxon architecture, the actual remains of this date being necessarily very scanty, the rough and massive parts alone remaining. The shortness of our time will also prevent our touching upon mediæval drawings. Their chief characteristic is their boldness and vigor, and for the most part they seem to be sketches with figured dimensions, rather than measured drawings. Turning from these to wood-engraving, we find the earliest woodcut print known bears the date of 1423, and the first engraved metal plate 1461. The first book published with plate engravings was Dante's "Inferno," which appeared in 1481. Perhaps the earliest instance of architectural illustration published in book form is the edition of Vitruvius by Frontini, date 1496. The material and the construction of the buildings are shown in the sectional parts, which was not the case in most of the later editions and subsequent works of the kind. In Germany, early in the sixteenth century, we have the splendid woodcuts and plates by Albert Dürer, whose illustrations of architecture in the backgrounds of his pictures deserve the closest study. His drawing was thoroughly Gothic in spirit, and equally adapted for the style of work he represented. The starting-point of our subject in England dates from the middle of the seventeenth century, when we arrive at a considerable advance in the art of engraving compared to that found in the books already mentioned; but we lose that technical quality which renders the illustrations of architecture of value to the student. If the drawing of the architect has to be rendered by other than a specially trained hand, it is obvious that much accuracy and feeling will be lost. Hence the surpassing advantage of those modern processes by which an original drawing can be mechanically reproduced without the intervention of any hand-work whatever. But to return. The earliest works of any importance for their engraved illustrations of buildings are Dugdale's "Monasticon," and Dugdale's "History of St. Paul's." The "Monasticon" bears the date of 1655. The plates were chiefly by Hollar.

A book illustrating St. Peter's was published at Rome in 1684, which shows that building in a more technical manner, and as a contemporaneous publication deserves mentioning. The designs of Inigo Jones were not published till 1727, when they were illustrated by Kent. The first edition of the "Vitruvius Britannicus" appeared in 1717. In 1728 James Gibbs published his "Book of Architecture," which furnishes an admirable series of details in his well-known style. Most drawings of this date have a gray and monotonous effect, — the windows being treated as mere holes in the wall, so to speak. The plates are executed on copper, in what is called "stroke" engraving, the instrument used being a "graver," which gives a clear and decided line, quite different in effect to the freedom of an etching-needle. It is this period that the school of English engraving dates from; previously the work had been executed by foreigners. Hogarth was one of the earliest English engravers, and his works are familiar to you. We now arrive at the first glimmerings which foreboded the advent of the Gothic revival. All traces of mediæval principles had ceased to exist in the practice of architecture; and "if there is one period more distinguished than another for its neglect of Gothic, it was certainly the middle of the eighteenth century." For illustrations published at this time, few are of more interest than those of the much-abused Batty Langley. To his drawings we owe most of the so-called Gothic work of that time. Leaving the works connected with the Gothic revival for the moment, we note in the words of Mr. Fergusson the "publication of Dawkins and Wood's illustration of Palmyra and Baalbec, in 1750, which first gave the English a taste for Roman magnificence undiluted by Italian design; but the works which permanently affected the taste of the country were the splendid series of Stuart's 'Athens' in 1762." The care of these plates is deserving of all praise, especially the drawing of the sculpture, though the stippling is overdone, and the views generally are too dark. These remarks refer to the first edition. Nothing could surpass the plates published in the last edition, with the supplemental volume by Professors Cockerell and Donaldson (1830). Reverting again to the Gothic school, it is interesting to remark the entire absence of sympathy for the style. Indeed, so entirely lost was the spirit of mediæval art that the drawings of those who professed their preference for Gothic work are made in the same feeble way, regardless of all feeling. James Bentham's "History of Ely Cathedral," and Grose's "Antiquities of England and Wales," are of this class. The next name in my note-book is John Carter. He was the author of several important books, the most valuable being his "Ancient Sculpture and Painting of England," 1786, republished in 1838. To John Carter's rendering of mediæval art the revival is greatly indebted; while his writings, extending over twenty years, had great influence in forming a taste for Gothic amongst thousands who had hitherto regarded the style as worthy of no consideration but contempt. In 1786 the first professional journal in this country was started, under the title of the *Builder's Magazine*. It was edited by George Cook, architect and builder, and illustrated by John Carter, to whom its chief merits are due, although his designs, which furnished materials for most of the plates, are all in very bad taste, judging by present standards. The admirers of Gothic, however, were not sufficiently numerous or enthusiastic to support a journal of their own; so that the *Builder's Magazine* only lived through one volume.

Among the books of architecture published during the Georgian period few have more interest to us, especially at the present moment, than the work of the Brothers Adam, whose "Architectural Designs" came out during the years 1773 to 1822. The plates were engraved by Bartolozzi, Piranesi, and others. The book opens with a beautiful drawing, representing Minerva in the act of pointing a student to Greece and Rome as the source of all true art and literature; but, however worthy the conception and wholesome the advice embodied in it, we do not find the authors always practising their precept, charming as some of their designs undoubtedly are. For instance, they favor us with a new order, calling it the "Britanic." The design is characteristic of its name, as the lion and unicorn are used as volutes on a composite cap, and are interspersed in the foliage of the frieze after the manner of a chevy-chase. This was proposed for Carlton House. In 1805 Frederick Nash, the first of the line, gave to the world his aquatint views of St. George's Chapel, Windsor, with details to inch scale. In considering the subject of architectural illustrations, few names deserve a higher place than John Britton, the author of

some seventy works, a large number of which were illustrated. Among the most important were the "Antiquities of Great Britain" (1814), and the "Cathedral Antiquities." The picturesque, however, predominates over the technic in both these works, the geometrical drawings being to an exceedingly small scale. It remained for the elder Pugin to supply this want of knowledge, and insure those qualities to the Illustrations of Architecture which render them of value. Pugin and Le Keux published their "Antiquities of Normandy" in 1827. There is one peculiarity worthy of remark in the elder Pugin's drawings. It is their exceedingly fine line, enriched with back-lining, which at once destroys all breadth of feeling, and gives a perplexing effect. This practice of back-line was not confined, however, to Pugin. The younger Pugin first brought about a change in the system; but, to quote an authority, "there is a fizziness and action in all his plates, which may be looked for in vain in the real thing." If the influence of the works of Pugin is more vivid to us, the important researches of Cresy and Taylor must not be overlooked. In 1829 they published their work on the "Middle Ages in Italy," illustrated by steel plates, the tinted sheets being colored by hand. Their celebrated work on Rome appeared in 1821, with 135 plates, from actual measurements taken on the spot. The views are well etched by George Taylor; but the details are poor specimens of chalk lithography, excepting those of the larger caps. The geometrical drawings are in outline; and it is worthy of remark that the various materials and the manner of construction employed are carefully shown.

Turning once more to the Gothic school, the name of Lewis Nockalls Cottingham is conspicuous; to him we owe the first full-size details of architecture ever published. They appeared in his book illustrating Henry VII.'s Chapel, Westminster, dated 1822. The plates are in outline, and very well drawn. In classic architure the first full-sized drawings published were probably those of the Erechtheion at Athens, by Henry Inwood, architect of St. Pancras Church. They appeared in 1830.

I have not yet mentioned mezzotint engraving, which was very generally employed during the early part of the present century for popular illustrations of architecture. It was invented in 1643. The impression which a mezzotint plate yields resembles a drawing executed in washes of color. The process is exactly the reverse of that adopted in other styles of engraving. The whole of the plate is covered with a uniformly dark barb or ground, the design having been previously traced on the surface of the plate in the usual manner. The highest lights are then scraped away and burnished, the second lights being treated next, and so on till the work is finished, leaving the untouched ground for the darkest parts. Aquatint is similar in character to mezzotint, and is a more recent invention. In either an Indian ink or bistre drawing can be very closely copied; but like all colored drawings the tendency is to obliterate the details of a building, so that they may mean any thing. Lithography soon superseded all kinds of engraving for architectural work, and by the time we are now speaking of had reached great perfection, as seen by the next books to which we will refer; viz., Joseph Nash's "Architecture of the Middle Ages," and his "Mansions of the Olden Time in England," dated 1838-39.

With reference to the so-called fac-similes of John Thorpe's drawings, given by Richardson, they are in chalk lithography, and by no means do justice to the originals, which deserve the closest study. Speaking of chalk lithography, the name of George Hawkins deserves a high place: his work in this style has never been surpassed. Continuing our notes we have to record the inauguration of our present professional press. Before doing so, a deceased relative who did good work for thirty years must not be forgotten. I refer to the *Civil Engineer and Architect's Journal*, which commenced its career in 1837, five years before the *Illustrated London News* first saw the light. Its illustrations were rough woodcuts for some time, but its later numbers were enriched with lithographs. The *Builder* was started under the editorship of Alfred Bartholomew in 1843, and it consisted of five pages of letterpress with no illustrations, taking more the form of a newspaper. The published price was threepence. Its first illustrations were of a very general character, but soon assumed a more strictly architectural form, giving wood-engraved views of buildings somewhat in the manner it has maintained ever since. The first instance of lithographic illustrations in a serial journal appeared in "Weal's Quarterly Papers," which were commenced in 1844. This work consisted of essays on various subjects of interest to the profession. The *Building News* published its first number in 1855; its illustrations were engraved by the celebrated Orlando Jewitt, whose wood-engravings of architectural subjects have never been surpassed in England. The first lithographs published in the *Building News* bear the date of 1860. A somewhat similar paper appeared in 1849, called the *Architect and Building Operative*, but it only lasted two years. Retracing our steps to 1845 we note the publication of Mr. Edmund Sharpe's grand work, the "Architectural Parallels," in two folio volumes, giving elevations, plans, sections, and views in a thoroughly technical manner. Prof. Willis was the first to apply color to indicate the several periods of English Gothic in the plans of churches, but to Mr. Sharpe we owe its further application to details: thus by referring to the plates of his works on mouldings, one can tell at a glance the periods of the specimens shown. In 1847 Messrs. David and Raphael Brandon published a most valuable series of books, drawn on zinc by the authors, excepting "Parish Churches," the plates of which were lithographed by J. K. Colling. These works are too well known to need description; and the same may be said of Mr. James K. Colling's beautiful books, commencing with "Details of Gothic Architecture," dated 1851. We have now reached the time when Continental Gothic began to attract attention. One of the earliest collections of drawings of this style is that found in King's "Study Book," in four thick volumes, bearing the date 1857, a former edition being published at Bruges. All the subjects are shown to the same scale, which has the fault of being too small — necessitated, no doubt, by the size of the larger subjects. Back-lining is employed, and the carving is not particularly well drawn. Mr. Norman Shaw's "Sketches on the Continent" were completed in 1858, Mr. Nesfield's "Specimens" following four years later. The influence of these "twin sketch-books," as they have been called, was, no doubt, very considerable in the impetus they gave to the then increasing taste for French Gothic and the more muscular forms of construction. This good work — for in one sense it was good, however much we may regret the continued neglect of the English styles — was taken up by Mr. R. J. Johnson, who published his book of "Early French Architecture" in 1864. Here, to my mind, we have the type of what an architectural sketch-book should be. The plates, all drawn and lithographed by the author, are almost exclusively devoted to measured drawings, with a few perspectives, chiefly in outline. The opinion of so eminent an authority on such matters as Mr. Burges is always worthy of consideration; but one cannot agree with him that perspective sketches are only suited for overgrown schoolgirls. An outline of the building as a whole is most essential, in order that the detail may be justly valued and appreciated; while an idea of the surroundings, with their local peculiarities, is of the utmost assistance, however slightly shown. That which looks well and suitable in one situation appears crude and lumpy in another; and again, that which is admirable in geometrical elevation may be very bad indeed in perspective. The modern French have neglected perspective, and we find their architecture flat and thin as a result. Among the many works of a more pictorial character, we may mention the magnificent etchings of Mr. Ernest George, the anastatic drawings of Sir Digby Wyatt, and the photo-lithographed pen-and-ink sketches from Italy by Mr. George Edmund Street. Before concluding this part of my subject, some of the numerous works on color decoration, illustrated by chromo-lithography, must be named, especially those by Owen Jones, J. B. Waring, and Sir M. Digby Wyatt. Their influence in forming and extending a correct knowledge of color has been of the widest kind. Among works of this class more recently published, Racinet's "Polychromatic Ornament" is conspicuous; and so is the "Keramic Art of Japan," by Messrs. Audsley and Bowes, now in progress. They were executed in France, and as specimens of gold and color work are superior to any thing I have seen produced in England without exception. With these my list of published works closes, although I have only briefly alluded to some of the more prominent English books.

THE ILLUSTRATIONS.

ILLINOIS ASYLUM FOR FEEBLE-MINDED CHILDREN, AT LINCOLN. MESSRS. FURNESS, LAING, AND FEHMER, ARCHITECTS.

(Cor. Dearborn and Washington Streets, Chicago, Ill.)

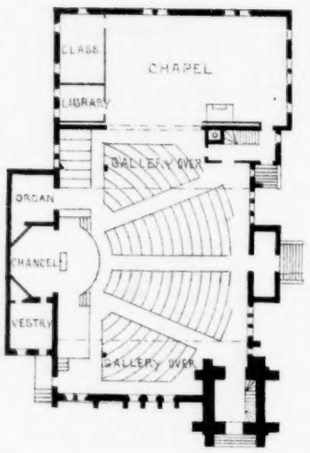
THE plans for this building now being erected were selected by the Board of Commissioners from several others submitted in competition. The State of Illinois appropriated the sum of $175,000 for its erection, and the building is well under way now to insure its completion by next spring. It is being built of red brick, and relieved with stone and white brick. The roof is covered with slate. Galvanized iron cornices and any superfluous display of ornamentation in the exterior as well as in the interior are scrupulously avoided; and it has been the principal aim of the architects to preserve the utmost simplicity in the design, with due regard to honest construction and honest use of the materials employed, in order to avoid any undue pretension in the character of the building. In the arrangement of the plan the centre part is for the accommodation of the various officers; it also contains in the rear a large chapel. The two wings contain the schoolrooms, hospitals, dormitories, gymnasium, and lavatories, for male and female children respectively. The culinary department is kept separate from the main building in order to prevent any disagreeable odor from entering the main building. This part is connected by covered passage-ways with the centre part as well as with the two wings. A hundred feet in the rear of the building is the boiler and engine-house with smoke-stack; the whole building is intended to be heated by steam. The general arrangement of the plan affords ample light and ventilation everywhere.

STUDIO FOR A. H. BICKNELL, ESQ., MALDEN, MASS. MR. T. GRIFFIN, ARCHITECT.

(172 Washington Street, Boston, Mass.)

ILLINOIS ASYLUM FOR FEEBLE MINDED CHILDREN : : FURNESS LAING & FEHMER ARCT'S. CHICAGO

HELIOTYPE
JAMES R. OSGOOD & CO. BOSTON

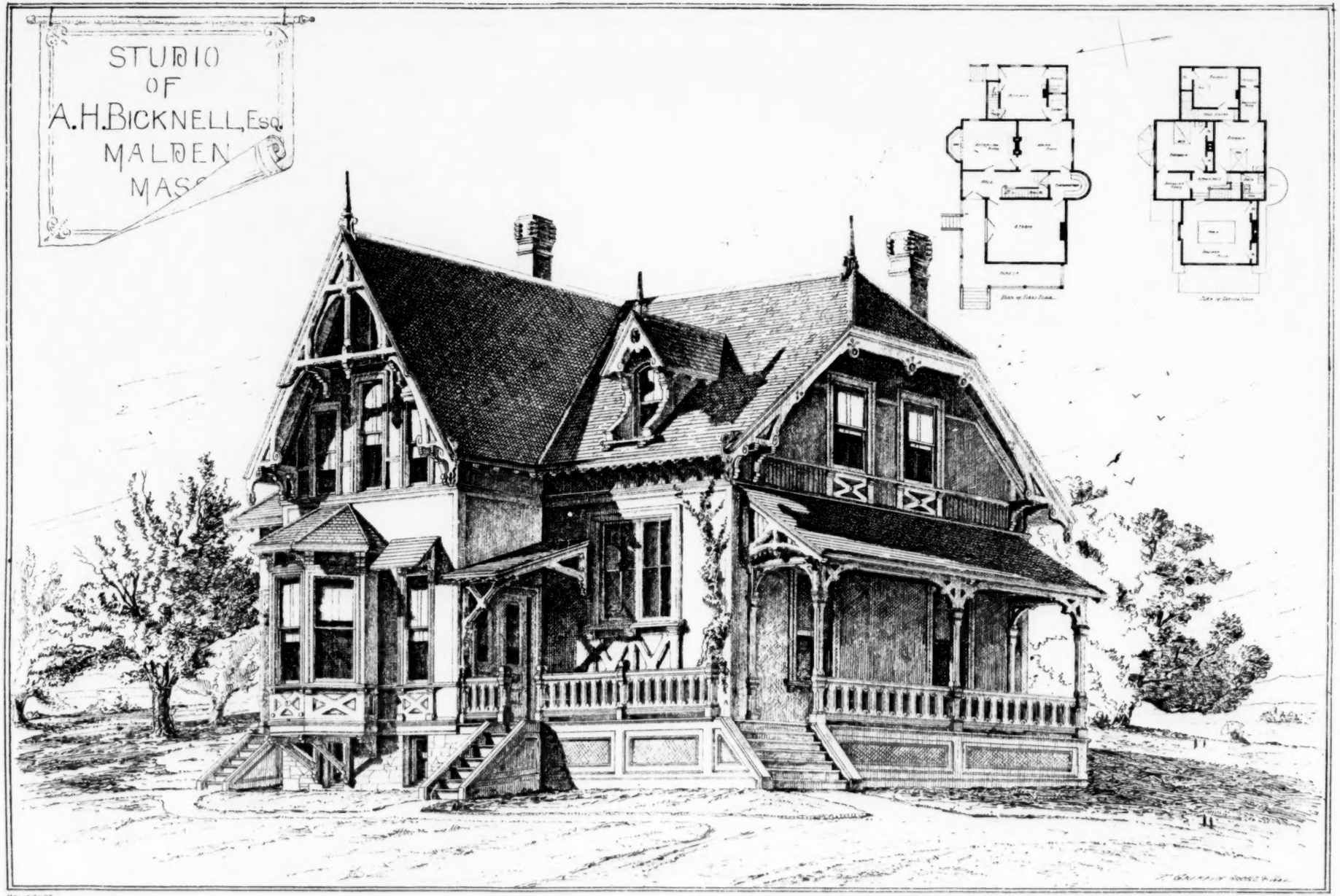


DESIGN FOR THE "OLD STONE CHURCH" CLINTON N.Y. E.H. GOUGE ARCH'T.

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

STUDIO
OF
A. H. BICKNELL, Esq.
MALDEN
MASS.



HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

ILLINOIS ASYLUM
FOR FEEBLE MINDED CHILDREN
AT LINCOLN.

FURNESS LAING & FEHMER.
ARCHITECTS CHICAGO.

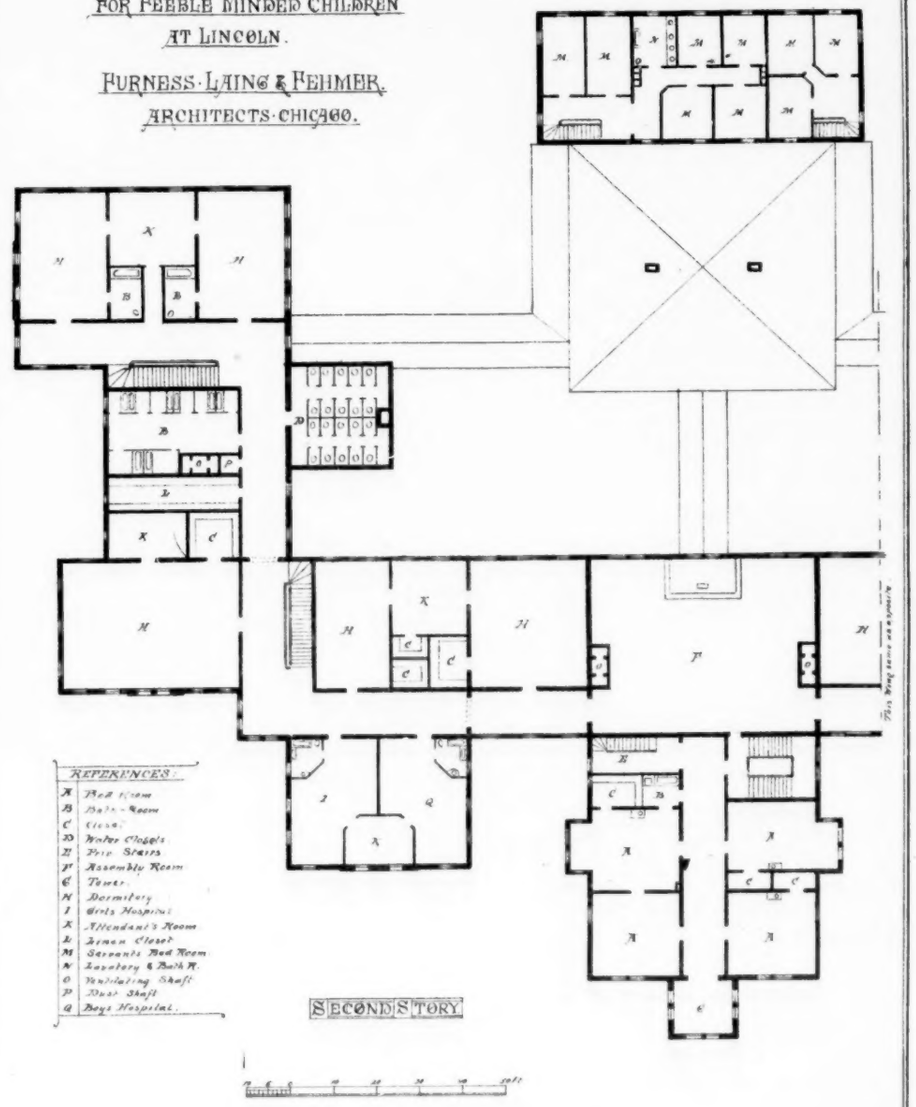
REFERENCES

A	Washing Room
B	Matr. Office
C	Dining Room
D	Parlor
E	Priv. Stairs
F	Nurses
G	Matron's Room
H	Clerk's Office
I	School Room
K	Gymnasium
L	Laundry
M	Bath Room
N	Water Closets
O	Ventilating Shaft
P	Dust Shaft
Q	Corridor
R	Girls Dining Room
S	Boys " "
T	China Closet
U	Servants Dining R.
V	Kitchen
W	Larder
X	Tower

FIRST STORY.

ILLINOIS ASYLUM
FOR FEEBLE MINDED CHILDREN
AT LINCOLN.

FURNESS LAING & FEHMER.
ARCHITECTS CHICAGO.



REFERENCES

A	Bed Room
B	Bath "
C	Closet
D	Water Closets
E	Priv. Stairs
F	Assembly Room
G	Tower
H	Dormitory
I	Girls Hospital
K	Attendant's Room
L	Linen Closet
M	Servants Bed Room
N	Lavatory & Bath R.
O	Ventilating Shaft
P	Dust Shaft
Q	Boys Hospital

SECOND STORY

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

DESIGN FOR THE "OLD STONE CHURCH," CLINTON, N.Y. MR. FRED. H. GOUGE, ARCHITECT.

(Utica, N.Y.)

This is a design submitted for a Presbyterian church at Clinton, N.Y. It was proposed to build the walls and spire of a local sandstone, with wrought work of Trenton limestone; the roof to be open-timbered, finished with pine. Aside from the regular service, the church was to be used for the holding of college exercises; and the plan was so arranged that the chapel could be added to the audience-room by means of sliding doors underneath the gallery. The above requirement also modified to some extent the arrangement of the vestry, chancel, and platform. Church parlors were to be provided underneath the chapel. The building was to be heated by steam, and ventilated by means of a shaft heated by the smoke-flue from the steam-heater. The church was designed to seat one thousand persons.

DOES IT PAY TO EMPLOY EXPERTS?

AT Newport the sewerage question has been much discussed; and the city councils have awakened from time to time to a dull sort of comprehension of the idea that something must be done. Something has been done here and there; but it has been done with the sort of economy that is apt to prevail where "practical" men take charge of the public works of the community, and guard the treasury against all manner of extravagant expenditure, such as the employment of an expert to direct the extent and character of the work to be done.

Newport's last achievement is a sewer running from the Bath Road to Narragansett Avenue. This sewer has been built by days' work under the direction of the street commissioner, and according to a plan approved by the city council. The government and the commissioner congratulate themselves that the work has been done at less cost than it would have been by contract. This seems to be the case, and doubtless it has been well done. Its cost is given at $12,248.98. The lowest contractor's estimate was about $15,000.00.

The sewer is twenty-nine hundred feet long, thirty-six inches in diameter, and its wall consists of two courses of brick (an eight-inch wall). The area which will be drained into the head of this sewer is about sixty-five acres, nearly level land. It is an established rule among engineers, that the thickness of the wall of a sewer should be not less than one-ninth of its interior diameter, the wall of a three-foot sewer being four inches thick. It may even be questioned whether such a wall made of a single course of brick, and firmly held in a matrix of earth pressing closely against it from every side, is not more secure than when another and needless course of brick intervenes between it and its matrix. Certain it is, that three-foot sewers with four-inch walls carefully laid, and properly secured by careful filling are always and everywhere strong, permanent, and sufficient. The only exception to this rule, the only case where extra thickness is needed, is where the sewer lies so near the surface of the ground as to lack a sufficient binding weight of earth, and to be too much exposed to pressure from the surface.

In the sewer in question, the useless outer four inches of the wall contains about eighty-three bricks to the foot. At the prices paid for labor and material, the estimated cost of the work is $17.15 per thousand bricks, or $1.41 per foot of sewer, or $4,089.00 for twenty-nine hundred feet. To this should be added the increased amount of excavation and back-filling, and the greater trouble from quicksand and water ducts, the less rapidity of the work.

By gaugings in Providence, there have been eleven storms of one inch or more per hour in forty years. Such storms are usually short and sudden; and only a small part of their water finds its way to the sewer, even in paved and covered districts. When it rains all day, it is rarely that an inch of water falls within twenty-four hours. In suburban districts as nearly level as that at Newport, it would be much more than ample to provide for the flow of storm-water into the sewers of one-fourth inch per hour. This would equal about nine hundred cubic feet per acre per hour, or for sixty-five acres, 58,500 cubic feet per hour, or 975 cubic feet per minute. The capacity of the sewer as built is about twenty-two hundred cubic feet per minute; and the capacity needed as above would be given by a circular sewer twenty-six inches in diameter, laid on the same grade as the present one.

In view of the flatness of the grade of the whole water-shed above Narragansett Avenue, every requirement of prudence would be met by making one-half of the sewer twenty-four inches in diameter, and the last half thirty inches in diameter. The saving in masonry alone that would result from these deductions would be thirty-one cents per foot for one-half of the distance, and forty-five cents per foot for the remainder, or an average saving of thirty-eight cents per foot for twenty-nine hundred feet, equal to $1,102. The saving in excavation would be very material; and the rapidity of the brick-laying would greatly lessen the cost of pumping, shoring, etc.

The figures given show a total saving in masonry of $5,191. If we allow a little more than $900 for saving in excavation, back-filling, etc., we should have a total saving equal to just one-half of the cost of the work as done. Considering the character of the water-shed, and the grade of the sewer, it seems likely that the small sewer would cost less for cleansing and maintenance than would the one actually built.

The city authorities of Newport have avoided the criticism to which they would have been subjected had they paid a competent sewerage engineer two hundred and fifty dollars to lay out their work properly; and their economical neighbors, who would have made the criticism, will not be likely to look so deeply into the matter as to see that the saving of this expense has cost the city about six thousand dollars.

CORRESPONDENCE.

THE THIRD DISTRICT COURT-HOUSE INVESTIGATIONS. — THE BROOKLYN VERDICT.

NEW YORK.

THE week has brought out two reports which have been some time looked for by the public and those who are interested in building and architectural matters. The coroner's jury on the inquest held on the victims of the Brooklyn Theatre fire have rendered their verdict; and the committee in charge of the investigation of the Withers and Vaux charges have reported to the Common Council. Why an investigation should have been instituted by the Board of Aldermen into a matter in which they had no more than the interest of ordinary citizens is not known; but it offered an excellent opportunity on the part of the complainant to give notoriety to his claim for "extra work," and gratified his spite after a defeat in the courts. Many of the assertions against Messrs. Withers and Vaux were simply ridiculous, and no evidence was adduced in support; for instance, it was asserted by Cushing that both Withers and Vaux were insane.

The only appearance of a valid charge was on the practice which seemed to have existed in the office of these architects, on this work at least, of having bills of quantity drawn up; this was construed by Cushing into a system of blackmail or imposition; but the rebutting testimony of experts at the session of the committee made the matter so clear that in place of being a burden, several of the other contractors testified that the payment of ¾ of 1 per cent for these surveys and bills enabled them to estimate closer, and was actually a saving directly to themselves and indirectly to the city. These calculations and tables of quantities were not drawn up by the architects, and it was shown that they in no way profited by their preparation; but, uncontradicted, the charge looked very damaging, and so far answered the probable aim of the accuser.

The reports to the Board of Aldermen were a majority and a minority report; one finding that the architects were "remiss" in not condemning the unusual charge for bills of quantity, and the other explaining the relations of the accuser and architects, and putting the whole matter in such a light as to effectually expose the animus of the attack.

On the whole, the investigation seems to have resulted in a complete vindication of Messrs. Withers and Vaux, and to have shown that in their supervision of the Jefferson Market Court-House, they have bestowed upon the city of New York the best piece of architecture it possesses to-day, and, remarkable to say, at a cost less than the amount appropriated for the work.

The Brooklyn inquest has been most carefully conducted, though the influential citizens making up the jury failed to discover any facts of consequence not generally known through the press within a few days of the occurrence. After reciting the number of lives lost, &c., the verdict goes on to say, —

"That the said building, known as the Brooklyn Theatre, was constructed in a substantial manner, was admirably adapted for the purpose for which it was intended, so far as its modes of entrance were concerned, and also so far as its means of egress from parquet and dress-circle. There would, in our judgment, have been greater security for the safety of the audience if there had been a brick wall extending from cellar to roof, separating the stage from the auditorium, also hand-rails on each side of the stairway leading from the gallery.

"That the said fire gained headway and failed to be extinguished because of the inexcusable neglect of the management of the said theatre, which appears in these especial details:

"*First*, That there was no responsible head of the employees.

"*Second*, That there was no discipline among the employees.

"*Third*, That the appliances for the extinguishment of fire upon the stage or in the flies were wholly inadequate.

"*Fourth*, That the fire-hose formerly at hand had not been kept in place or use.

"*Fifth*, That the stage was overcrowded with scenery used in former plays, thereby rendering its condition extra hazardous, and adding to the volume of fire, if not directly the cause of it.

"*Sixth*, That the indifference shown in the neglect to recognize the danger from fire by providing proper appliances for its extinguishment when warned by the occurrence of two fires — one on the stage, the other in the box-office — but a week before the final destruction, constituted a violation of a most vital duty to the public, who were justified in confiding in the management for the utmost security in that regard.

"That the business manager of the said theatre was guilty of a culpable neglect, in that the means of exit from the dress-circle to Flood's Alley, near Johnson Street, was so effectually closed as to resist the efforts of several persons who attempted to force it.

'That it is the special duty of managers of places to which the public are invited, to put forth every effort to secure their safety, and that the slightest degree of negligence becomes criminal when contributed by persons holding such relations to the public.

"Recognizing our grave responsibility as jurors on an inquest through which we have sought to discover the causes of the most disastrous calamity which ever befell our city, and, having discovered them, to fix the blame where it properly belongs, we feel that we would be wanting in the complete performance of our duty if we did not warn the public to demand of the proper authorities such legislative action as would hereafter, under severe penalties, assure greater security to life in the construction of buildings intended as places of public amusement, and so far as in their power prevent the occurrence of any similar disaster.

"Not being experts either in the building or management of places of amusement, we would be diffident in giving advice upon the subject, did the evidence before us not unanimously lead to the following conclusions:—

"*First*, In the erection hereafter of any building intended for theatrical purposes there should be a brick wall extending from cellar to roof, dividing the stage from the auditorium.

"*Second*, There should be two fire-hydrants on the stage, one on each side, at some convenient place; there should be one in the fly-gallery; there should be one in the front lobby, — to each of which hydrants there should be attached a proper length of hose, frequent examination of which should be made, so as to insure its being at all times ready for effective service.

"*Third*, There should be employees of theatres, whose sole duty should be to attend to these hose at all times when there was an audience in the building.

"*Fourth*, As a third gallery is attended with more than ordinary danger, not less than two wide and commodious stairways should be provided as a means of exit from it.

"*Fifth*, As a scientific discovery and experiment have demonstrated the possibility of rendering incombustible the material used for scenery, the use of any inflammable article for that purpose should be prohibited.

"*Sixth*, There should be hand-rails on each side of every stairway.

"*Seventh*, There should be iron fenders at intervals of not more than twelve feet upon all the border-lights, so that no portion of the scenery, whether through carelessness or accident, could come in contact with the wire which encloses the gas-lights."

There is a feeling that the coming season will be better than that of 1876 in the way of building on the part of capitalists. Griffith Thomas is to cover the valuable plat owned by Mr. George Kemp on Fifth Avenue and Forty-fifth Street with a great apartment house. Mr. Kemp, it will be remembered, has but just completed the Buckingham Hotel, a block or two farther up the avenue. The Trinity altar-piece for the Astor Brothers is getting on: several of the statues have arrived from England, and the construction of the Caen-stone work is in every way satisfactory. Upon its completion, the designer will issue a volume of enlarged photographs of the several parts, illustrating the carving and modelling on the work.

RESPONSIBILITY FOR BAD BUILDING.

TO THE EDITOR OF THE AMERICAN ARCHITECT.

Dear Sir, — With reference to the "accident" (?) in consequence of bad building, quoted in your last issue from English papers, and in which the responsibility seems to have been laid where it (perhaps) justly belonged, — on the *builder*, as no architect appears to have been employed, — will you allow me to ask on whom the responsibility would have rested in such a case, in this State; and on whom it would have rested *had* an architect been employed?

Also, can you say with confidence, that could such an "accident" be directly traced to bad building or inferior materials, it would be followed by "an accusation of manslaughter" against the responsible party, in our courts, and punished as such?

Again, let me suppose another case. Suppose one or more workmen engaged on a building, or a person passing by, should be killed or injured by the falling of a derrick or a staging insufficiently strong: would such an "accident" with us render the party responsible subject to "an accusation of manslaughter," and would he be likely to be punished accordingly? Also, in the latter instance supposed, who would be responsible in case an architect was employed to superintend the building, — the architect or the builder, or possibly the proprietor, especially if no architect was employed?

I am induced to ask these questions mainly by your paragraph referred to; but its reading recalled to my mind several "accidents" — so called — that have occurred from time to time in the erection of new buildings in this city, and I am exceedingly doubtful whether in those instances any one was found responsible and punished for unnecessary destruction of life or limb.

I will just mention the three or four fatal "accidents" that have occurred during the erection of the new Trinity Church, to workmen employed on that building.

It seems to me that in the English case under consideration, and perhaps in all cases, the proprietors of the building should be held civilly and criminally responsible. This would be the most effectual means of protecting the public, and especially the workmen employed, from unscrupulous builders and incompetent and neglectful architects. Oftentimes neither the architect nor the builder is financially responsible, whereas the proprietor may be generally supposed to be so; and his defence would be to employ only competent and trustworthy persons, and bind them by their contracts to a faithful performance of their duties.

Such a method of reducing building "accidents" to a minimum would be the best for the public, and also, in the long run, best for architects, builders, and workmen, and all concerned.

It is the more necessary in these days of "cheap and nasty," because so many erections are put up — I can't say built — by mere speculators, whose end is accomplished if they will only stand until they are sold. Great is competition.

BOSTON, Jan. 27, 1877. W. G. H. SMART.

[WE should expect that if such a thing happened in this State the responsibility would rest upon the person to whose neglect or misconduct it could be traced. We do not think the law is so fixed here as to assign definite degrees of responsibility to proprietor, architect, or builder. If an architect were employed, his responsibility would have to be determined by general considerations, we suppose, in the absence of either definite enactment or precedent to cover the case. We doubt whether an action of manslaughter would be brought here in any such case; and if it were, whether any jury could be got, in the present state of the law, to convict. What we had in mind was the passage of some specific law which should make either proprietor, architect, or builder, to whomever the fault of bad building could be traced, liable to the penalty for manslaughter in case of fatal casualty resulting from it. In the *Architect* for the month of July, 1876, will be found several articles on the responsibility of contractors for accidents that befall their workmen. — ED. AM. ARCHITECT.]

BOOK NOTICES.

A BOOK[1] before us bears the imprint of G. P. Putnam's Sons; but a glance through it shows it to be an English book, printed in Glasgow, and concerning itself only with the methods of building which are practised in Great Britain. Looking at the list given on its fly-leaf of the "Advanced Science Series" to which it belongs, we find that all the two dozen volumes of the series are of English authorship. We do not quite see why Messrs. Putnam should have chosen to print for the American market an English treatise on a trade in which the methods of the two countries differ so widely as they do in the building trades; though it is quite true that the knowledge of the methods of one country is not amiss in another. Nor do we see why the publishers, if they wish to publish such a work, should have fixed on Mr. Burn's — unless it were because they knew of no other; nor, in fine, with what propriety the title of civil engineer can be attached as it is in the announcement of Mr. Burn's works, to the name of a writer who shows himself unfamiliar with common geometry. The book is neatly issued, and consists of a small duodecimo volume of text with cuts, and a small quarto of lithographic plates. The student will find in it a good many useful descriptions of the practical processes of building, not very well digested, and omitting many things that it is necessary to know on this side of the water, as well as neglecting many points which ought to be considered anywhere; slurring some, while others are dwelt on with great detail. For instance, fifty pages or so are given to a minute account of various bonds in brickwork, while of the method of laying it and the necessary precautions, hardly any thing is said. The chapter on mortars is very slight, and gives little information as to manipulation, strength, or the effect of weather and frost. In speaking of piling for foundations, nothing whatever is said of the method almost universally used here of capping the piles with a layer of hard stones; and in the chapter on drains, earthen pipe is barely alluded to, and cement pipe not mentioned. Room might easily have been made for these and other things by omitting some of the useless matter; for instance, the introductory chapter on drawing.

There are a good many quotations from writers who are better masters of their subject than Mr. Burn: in fact, we may say that the extracts are the most interesting part of the book. In his geometrical and scientific allusions, the author talks at random, as when he says that a drawing-board is "rectangular, that is, having a greater length than breadth;" or defines a right-angled triangle as one in which the hypothenuse is at an angle of 45° to the base, and a plan as "the projection of any body taken on a line parallel

[1] Building Construction: showing the Employment of Brickwork and Masonry in the Practical Construction of Buildings. By R. Scott Burn. 2 vols., text and plates. New York: G. P. Putnam's Sons. (Putnam's Advanced Science Series.)

to its base;" or says that the "line of rupture is the angle at which materials slip," etc. "Blocking-cornice" for block-cornice, and "transitive" style for transitional, may be slips, but a jamb "moduled or moulded" can hardly be so. There are things worth the student's knowing in the book, but we cannot recommend him to take it for a manual.

CHICAGO.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — I am just in receipt of a copy of a work on roof-trusses, that I have so often felt the need of that I am sure it will be welcomed by all architects. It is entitled GRAPHIC ANALYSIS OF ROOF TRUSSES, for the use of Engineers, Architects, and Builders; illustrated by three folding plates. By Charles E. Greene, Professor of Civil Engineering, University of Michigan. George H. Frost, publisher, Chicago.

It first appeared as a series of articles in the *Engineering News*, where it first attracted my attention. I soon became satisfied that it supplied a want, long felt, of having at hand in the office the necessary data and methods of readily calculating by the graphic method all the roof-trusses that were likely to arise in an architect's practice. But as the form scattered through several numbers of a journal was inconvenient, and knowing Mr. Greene very well, I often urged upon him the advantages that architects might derive from his researches if he would only have them published in a book form. This he promised to do, but it has from different causes been delayed until now. The work, which retails for $1.25, only contains some 64 octavo pages, and three sheets of diagrams; will be found not only accurate, but, what is equally essential in a work of this kind, all the methods are of easy application. Of this, however, all who know Mr. Greene's happy faculty of combining thorough scientific analysis with clear practical applications will have no doubt.

The table of contents will give some idea of the scope of the useful little work: —

Introduction; General Principles; Trusses under Vertical Forces; Trusses with Horizontal Thrust; Trusses with Flat Roof; Forces not applied at Joints; Wind Pressure; Bending Moment and Moment of Resistance; Load and Details.

The examples include, besides all the more usual roof-trusses, the hammer-beam truss so often used in church work.

The book sells for so small a price, and is of so much assistance whenever it is a question to design a roof-truss, that I venture to recommend that it should be in the office of every architect.

Very respectfully, W. L. B. JENNEY.

[We have received Prof. Greene's little treatise, and need only indorse what we said (see Vol. I. page 65) of the papers at the time they appeared in the *Engineering News*. — ED.]

BOOKS RECEIVED.

A Practical Treatise on Heat, by Thomas Box. E. & F. N. Spon, London and New York. Price, $5.00.

Architectural Surveyors' Hand-Book, by J. T. Hurst. E. & F. N. Spon, London and New York. Price, $2.00.

Fires in Theatres, by Eyre M. Shaw. E. & F. N. Spon, London and New York. Price, 50 cents.

Report of the Inspector of Buildings for the City of Boston, Mass.

Proposed Building-Law for the City of Providence, R.I.

The Graphical Analysis of Roof-Trusses, by Prof. Chas. E. Greene. G. H. Frost, Chicago, Ill. Price, $1.25.

JOURNEY OF AN ARCHITECT IN THE NORTH-WEST OF EUROPE. — IV.

THE SYNAGOGUE AT HANOVER.[1]

THE most important modern ecclesiastical building in Hanover is the new synagogue, the architect of which is Mons. Oppler.

The synagogue was anciently the place where the Jews met to pray, to read and expound the sacred Scriptures. This custom has not been changed; and the Hebrew worship, after the lapse of three thousand years, requires no modification of the arrangement according to which the temple of Solomon was built. It seems therefore, at first sight, that the plan of this temple ought to have been adopted for all synagogues in every country; but the requirements of different climates are not the same. It was necessary to plan an edifice which by its form, its character, and the system of its construction, is adapted to present circumstances, and at the same time in accordance with the traditions which it must recall, and the fundamental principles which it must transmit. Synagogues, vary therefore in form as much as in architectural disposition.

The ground-plan of the Hanover synagogue [fig. 106] is conformable to conventional notions. It assumes the form of a rectangle; but the greater width to the right and left of the nave would unfortunately recall the idea of the cross, were it not that this transept is so disposed as to present, with the prolongation of the nave and the choir, a vast central division, which, correctly speaking, forms in itself the main portion of the building, divided from the aisles by arches springing from isolated pillars.

Before the entrance, which is at the west end, is a porch, to which open the staircases leading to the galleries; the vaulted roof

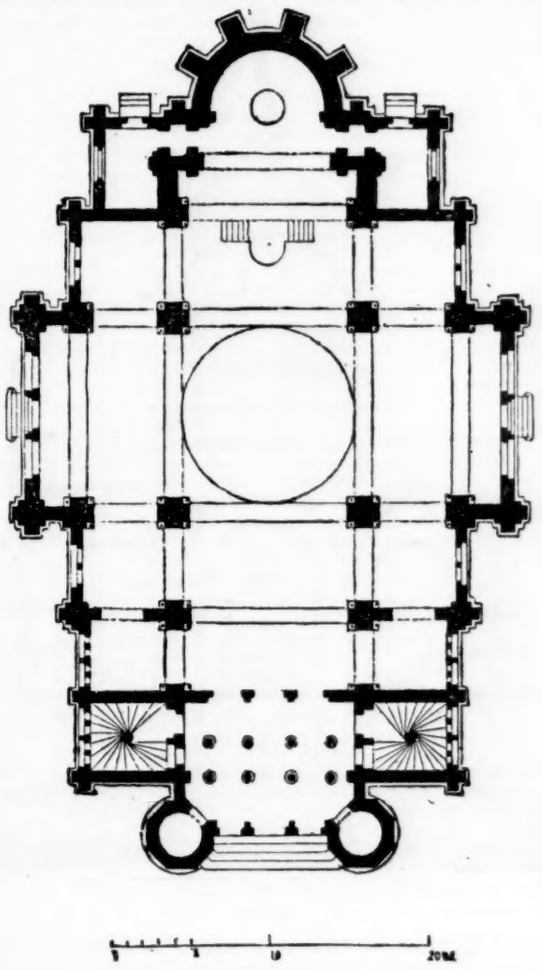


Fig. 106.

of this porch is supported by twelve columns, intended to represent the twelve tribes of Israel. Beyond the nave or *holy place*, is the sanctuary or *holy of holies*, placed at the east end. In the central part, a large cupola rises higher than any other part of the building, and symbolizes the idea of the unity of God.

Near the sanctuary there are two vestries, to the right and left; and at the entrance are two other rooms. In the large space on the ground-floor are raised seats reserved for men, and on the first floor those allotted to women. Within the choir are the stalls of the grand rabbi, of the members of consistory, and of the administrative commission. In front are the pulpit, the seven-branched candlestick, and the traditional lamp; in the apse, the ark or chest, a souvenir of the ark of the covenant, in which the Jews keep the five books of the law of Moses, written by hand on vellum, and rolled up in the ancient manner.

We may notice among the architectural details of the interior [fig. 107] the large arches of the nave, which occupy its whole height from the ground to the roof, without being cut by lower arches intended to support the galleries. These remind one of the ancient churches in Westphalia, in which the aisles were always as high as the nave. The galleries are sustained on pillars and consoles of wrought iron, and seem to be independent of the structure, so that they might be removed without making any other change in the disposition of the building. This is perhaps a fault, but, on the other hand, the plan adopted is novel; it increases the elevation of the vaults, since no combination of details interferes with their height. The cupola is supported on four squinches, formed of retreating arches successively lessening as they recede. The rest of the building is covered with groined vaults with projecting ribs. The whole has a comfortable and rich appearance, which will be still more augmented by the decorative parts, which are far from being finished at the present time.

This synagogue is built of freestone, as well as brick, wood, and iron. This is one of the few buildings in Hanover in which we have noticed the employment of iron. Its use has been so well

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understood, and it has here been employed in forms and combinations so appropriate to its nature and to the part which it plays in the construction, that it is evident that its unfrequent application is not owing to Hanoverian architects not knowing how to

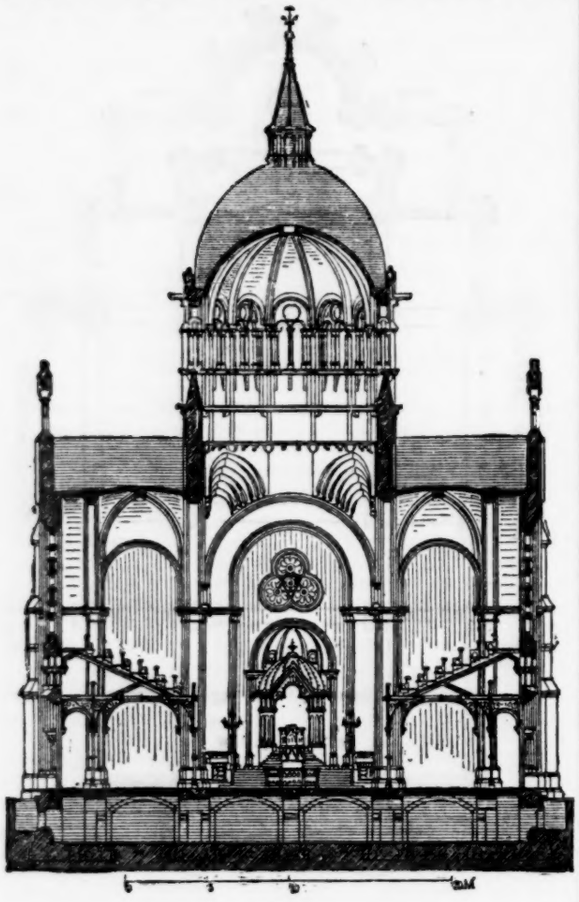

Fig. 107.

employ it with effect. It rather depends on the influence of wise economical views which cause timber to be preferred to iron, since the former is still abundant in the country and comparatively cheap.

NOTES AND CLIPPINGS.

THE BARTHOLDI CENTENNIAL FOUNTAIN. — M. Bartholdi has once more given evidence of his generosity in offering to the United States Government the bronze fountain which during the exhibition stood between the Main Building and Machinery Hall, for $7,000 — said to be the cost of the bronze alone.

THE PROPOSED NATIONAL MUSEUM. — The chairman of the Centennial Committee has prepared a bill appropriating $250,000 for the erection of a building to receive the articles presented to the Government by foreign Centennial exhibitors. Quartermaster-General Meigs has prepared plans for such a building, which shall be placed upon the grounds of the Smithsonian Institute.

PANIC IN A CHURCH. — On the evening of the 1st inst., a panic was caused in a church at East Columbia, O., by the giving way of a retaining-wall four feet high, which was built to retain a hillside. In its fall it struck against the side of the church with such noise and violence as to produce the impression that the hillside had given way and was carrying the church before it.

OLD CHURCH REMODELLED. — A correspondent writes us that at Delhi, N.Y., St. John's Church, an old-fashioned but shapely building, has been remodelled with great success from the design of R. M. Upjohn, Esq. The interior is very striking, and the chancel is especially beautiful in design and coloring. Pews, wainscoting, columns, and external features, porches, etc., are all new. Rich memorial windows have been put in, and all unsightly remnants removed. Strict adherence to the architect's plans has resulted in complete satisfaction.

THE STRASBOURG CLOCK. — A fac-simile of the famous Strasbourg clock is on exhibition at 224 Broadway, South Boston, Mass. The clock is a wonderful piece of mechanism, and was made by a young German, who took seven years to build it. It possesses all the features of the greater one.

THE STONE KETTLES OF KENTUCKY. — A correspondent of the Cincinnati *Enquirer*, writing from Hillsborough, Ky., describes these strange utensils, the supposed work of the prehistoric inhabitants of America. After passing through an oak forest, and climbing a steep hill which was remarkable for the absence of rocks on its surface, he found the lid of one of them, and shortly afterwards found the kettles. At one time there must have been about a dozen of them, but now only four of them are preserved. The roots of trees growing near by have split some of them, and other causes have helped further their destruction. The kettles are hewn into the soft sandstone, but exposure has removed all traces of chisel-marks. He saw a few scratches, but they seemed to have been made by recent explorers. Each of the kettles was about five feet in diameter, strictly circular, and two feet in depth. A bevel is cut on the edges to receive the lids, several of which lie near by. Upon the upper edge of several of the kettles a groove has been chiselled into the rock, seeming as if, after the lid had been put on, cement had been used to exclude moisture. The lids lie near by, with one exception. They are large pieces of sandstone, of a circular shape, the under side flat and the upper hewn to an oval shape. All the work about these lids, and the kettles, is smooth and well done. To have placed the lids on the kettles must have taken the work of a number of men, for they are quite heavy. Three of the kettles, that are in a good state of preservation, are situated on an arc of a circle whose diameter is about forty feet. The two farthest apart of the three have a distance of about twenty-five feet between their centres, while the remaining one is situated midway between them on the arc of the supposititious circles passing through their centres. From the regularity of the positions of these three, and the general position of the remaining ones, it would appear that they had all been arranged in like groups of three. Two of the groups are on the same level, and the remaining groups were on a parallel level. The kettles are placed on the side of a hill, having about the same angle as its slope. Further, they are so placed that they are exposed to the sun for the longest possible time.

DRAWINGS OF THE MOUND-BUILDERS. — Not far from Davenport, Io., have lately been discovered, at a depth of five feet from the surface, and covered with a stratum of white yellow clay, two coal slabs, — one of them an inch and a half thick, and about one foot square, and the other six inches square, covered on both sides with figures and animals and birds of extinct species, and drawings which have puzzled the members of the Davenport Academy of Science. On one there can be traced some fourteen figures surrounding a fire, hands joined. On one side of the fire, within a circle, is a figure lying on the ground, supposed to be a dead body. On the other side are two similar figures. In the right-hand upper side is a circle, about an inch in diameter, said to represent the sun. On the left-hand side on the same line is another circle, supposed to represent the moon. Outside the circle of fire-worshippers are, covering the whole slab, small figures of birds and animals, among them one larger figure, which Dr. Farquharsen says undoubtedly represents the mastodon. Another slab, six inches square, has three circles, one within the other, the outer one as large as the face of the slab will allow. Between the first and second circles are characters at equidistant points, corresponding to what would make the quarter-hour on the face of a clock-dial. Between the outer and second circles are twelve characters at distances corresponding to hour-figures on a clock-dial. Outside of the outer circle and dispersed all over the face of the slab, are figures and signs. It is thought that the interpretation of these inscriptions can be arrived at by the aid of data in possession of the Davenport Academy of Science.

BRICKLAYERS' STRIKE. — The latest information we have states that the strike at the Messrs. Doulton's still continues, as they persist in employing the "two plasterers" who are aided in their work by non-union men.

A STRONG-ROOM. — Messrs. Chubb & Son, the lock and safe makers, have just made a strong-room for a London bank. It contains a lobby in which will stand several iron safes. The remainder of the room is divided into two strong compartments for storing bullion, jewels, securities, etc. The outer door, which weighs nearly a ton, is made of wrought iron and hard steel, and is secured by two locks which throw bolts on all four sides. The room measures twenty feet by twelve feet, is nine feet high, and weighs about twenty-three tons. It is put together from the inside, so that no screws shall come through the outer plates. The plates are made to overlap, so that no straight joints exist. It took the Messrs. Chubb three months to construct this strong-room.

ÉCOLE DES BEAUX-ARTS. — The Minister of Fine Arts has at length obtained possession of the buildings on the Rue Bonaparte, Paris, adjoining the court-yard of the École des Beaux-Arts, at present occupied as a *succursale* of the Mont de Pieté (government pawnshop). They, or more probably their successors, are to be used as an additional museum, as the collections are already too large for their present quarters.

A PATTERN BOOK. — A book called *Kunstgeschichtliches Musterbuch* is now publishing in parts at Frankfort-on-the-Main, the author of which is Herr Fr. Christmann. It consists of large chromo-lithographic plates illustrating architecture, sculpture, painting, and the manufacturing arts. It is intended to serve chiefly as a pattern book.

GLASS VENEER. — Among the latest of the so-called improvements in the cabinet-maker's trade is the invention by Mr. Budd, of New York, of glass veneers, which are said to be good imitations of the woods they represent. The chief advantage of this new invention is that such veneers wear better than true wood veneers. Mr. Budd has had in use for more than two years a pianoforte covered with glass veneer, which has been moved three times without breakage or suffering damage by scratches.